

WHAT IS CLAIMED:

1     1.     An air control system for controlling both vent air and combustion air, comprising:

2             a sensor, wherein said sensor detects an environmental characteristic of an  
3     enclosed environment and wherein said sensor produces a signal representative of the  
4     detected environmental characteristic;

5             a single controller, wherein said single controller receives said signal and wherein  
6     said single controller utilizes said signal to determine if the detected environmental  
7     characteristic is within a desired operating range, and wherein upon said detected  
8     environmental characteristic being outside said desired operating range said single  
9     controller produces both a first output signal and a second output signal;

10            a vent air actuator, wherein said vent air actuator receives said first output signal  
11     from said single controller and responds thereto by operating to adjust said environmental  
12     characteristic in pursuit of said desired operating range; and

13            a combustion air actuator, wherein said combustion air actuator receives said  
14     second output signal from said single controller and responds thereto by operating to  
15     adjust said environmental characteristic in pursuit of said desired operating range.

1     2.     The air control system of claim 1, further comprising a plurality of appliances, wherein  
2     the operation of said plurality of appliances affects said environmental characteristic, and  
3     wherein said single controller individually interfaces with each of said plurality of appliances to  
4     individually control the operation of each of said plurality of appliances.

1 3. The air control system of claim 1, wherein said sensor is selected from a group consisting  
2 of: a pressure sensor, a temperature sensor, a humidity sensor, a particulate sensor, and a density  
3 sensor.

1 4. The air control system of claim 1, wherein said single controller includes an interface for  
2 communicating with an external electronic management system.

1 5. The air control system of claim 11, wherein said single controller includes memory for  
2 retaining historical data regarding operation of said sensor, said vent air actuator or said  
3 combustion air actuator.

1 6. The air control system of claim 1, wherein said vent air actuator is selected from a group  
2 consisting of: a variable speed fan, a fixed speed fan and modulating damper, a variable speed  
3 fan and modulating damper, and a modulating damper.

1 7. The air control system of claim 1, wherein said combustion air actuator is selected from a  
2 group consisting of: a variable speed fan, a fixed speed fan and modulating damper, a variable  
3 speed fan and modulating damper, and a modulating damper.

1 8. The air control system of claim 1, wherein said system includes a mechanical override  
2 safety switch.

1 9. A method for controlling both vent air and combustion air in an enclosed environment,  
2 the method comprising the steps of:

3           sensing an environmental characteristic of said enclosed environment;  
4           producing a signal representative of the sensed environmental characteristic;  
5           receiving said signal via a single controller;  
6           determining with said single controller whether said signal is within a desired  
7 operating range;  
8           producing with said single controller a vent air output signal and a combustion air  
9 output signal upon determining said signal has fallen outside said desired operating  
10 range; and  
11           adjusting said environmental characteristic of said enclosed environment in  
12 pursuit of said desired operating range and in accordance with said vent air output signal  
13 and said combustion air output signal.

1 10. The method of claim 9, further comprising the step of interfacing said single controller to  
2 a plurality of appliances and individually controlling the operation of each of said plurality of  
3 appliances with said single controller to affect said environmental characteristic of said enclosed  
4 environment.

1 11. The method of claim 9, wherein said step of sensing is performed with a sensor selected  
2 from a group consisting of: a pressure sensor, a temperature sensor, a humidity sensor, a  
3 particulate sensor, and a density sensor.

1 12. The method of claim 9, further comprising the step of communicating, via said single  
2 controller, with an external electronic management system.

1 13. The method of claim 9, further comprising the step of retaining historical data regarding  
2 said steps of sensing and adjusting.

1 14. The method of claim 9, wherein said step of adjusting is performed by: a variable speed  
2 fan, the combination of a fixed speed fan and modulating damper, the combination of a variable  
3 speed fan and modulating damper, or a modulating damper.

1 15. An air control system, comprising:

2 a sensor, wherein said sensor detects an environmental characteristic of an  
3 enclosed environment and wherein said sensor produces a signal representative of the  
4 detected environmental characteristic;

5 a plurality of appliances, wherein the operation of at least one of said plurality of  
6 appliances affects said environmental characteristic;

7 a single controller, wherein said single controller individually interfaces with each  
8 of said plurality of appliances to individually control the operation of each of said  
9 plurality of appliances, wherein said single controller receives said signal, and wherein  
10 said single controller utilizes said first output signal to determine if the detected  
11 environmental characteristic is within a desired operating range, and wherein upon said  
12 detected environmental characteristic being outside said desired operating range said  
13 single controller produces:

14           a vent air output signal to a vent air actuator, wherein said vent air actuator  
15 receives said vent air output signal from said single controller and responds  
16 thereto by operating to adjust said environmental characteristic in pursuit of said  
17 desired operating range;

18           a combustion air output signal to a combustion air actuator, wherein said  
19 combustion air actuator receives said combustion air output signal from said  
20 single controller and responds thereto by operating to adjust said environmental  
21 characteristic in pursuit of said desired operating range; or

22           both a vent air output signal to a vent air actuator and a combustion air  
23 output signal to a combustion air actuator, wherein said vent air actuator receives  
24 said vent air output signal from said single controller and responds thereto by  
25 operating to adjust said environmental characteristic in pursuit of said desired  
26 operating range, and wherein said combustion air actuator receives said  
27 combustion air output signal from said single controller and responds thereto by  
28 operating to adjust said environmental characteristic in pursuit of said desired  
29 operating range.

1   16.   The air control system of claim 15, wherein said sensor is selected from a group  
2 consisting of: a pressure sensor, a temperature sensor, a humidity sensor, a particulate sensor,  
3 and a density sensor.

1   17.   The air control system of claim 15, wherein said single controller includes an interface  
2 for communicating with an external electronic management system.

1 18. The air control system of claim 15, wherein said single controller includes memory for  
2 retaining historical data regarding operation of said sensor, said vent air actuator or said  
3 combustion air actuator.

1 19. The air control system of claim 15, wherein said vent air actuator is selected from a group  
2 consisting of: a variable speed fan, a fixed speed fan and modulating damper, a variable speed  
3 fan and modulating damper, and a modulating damper.

1 20. The air control system of claim 15, wherein said combustion air actuator is selected from  
2 a group consisting of: a variable speed fan, a fixed speed fan and modulating damper, a variable  
3 speed fan and modulating damper, and a modulating damper.

1 21. The air control system of claim 15, wherein said system includes a mechanical override  
2 safety switch.

1 22. A method for controlling air flow in an enclosed environment, the method comprising the  
2 steps of:

3           sensing an environmental characteristic of said enclosed environment;  
4           producing a signal representative of the sensed environmental characteristic;  
5           receiving said signal via a single controller;  
6           determining with said single controller whether said signal is within a desired  
7       operating range;  
8           interfacing said single controller to a plurality of appliances;

9 individually controlling the operation of each of said plurality of appliances with  
10 said single controller to affect said environmental characteristic of said enclosed  
11 environment:

12 producing with said single controller an output signal selected from the following:

13 a vent air output signal upon determining said signal has fallen outside  
14 said desired operating range;

15 a combustion air output signal upon determining said signal has fallen  
16 outside said desired operating range; or

17 both a vent air output signal and a combustion air output signal upon  
18 determining said signal has fallen outside said desired operating range; and

19 adjusting said environmental characteristic of said enclosed environment  
20 in pursuit of said desired operating range and in accordance with said output  
21 signal.

1 23. The method of claim 22, wherein said step of sensing is performed with a sensor selected  
2 from a group consisting of: a pressure sensor, a temperature sensor, a humidity sensor, a  
3 particulate sensor, and a density sensor.

1 24. The method of claim 22, further comprising the step of communicating, via said single  
2 controller, with an external electronic management system.

1 25. The method of claim 22, further comprising the step of retaining historical data regarding  
2 said steps of sensing and adjusting.

- 1 26. The method of claim 22, wherein said step of adjusting is performed by: a variable speed
- 2 fan, the combination of a fixed speed fan and modulating damper, the combination of a variable
- 3 speed fan and modulating damper, or a modulating damper.